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09/774,396	01/31/2001	David J. Lyon	M-9897 US	3069

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EXAMINER

MEINECKE DIAZ, SUSANNA M

ART UNIT	PAPER NUMBER
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3623

DATE MAILED: 11/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/774,396

Applicant(s)

LYON ET AL.

Examiner

Susanna M. Diaz

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MM

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-70 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-70 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/31/01; 4/17/01.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-70 are presented for examination.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1-34 and 47-70 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The basis of this rejection is set forth in a two-prong test of:

- (1) whether the invention is within the technological arts; and
- (2) whether the invention produces a useful, concrete, and tangible result.

For a claimed invention to be statutory, the claimed invention must be within the technological arts. Mere ideas in the abstract (i.e., abstract idea, law of nature, natural phenomena) that do not apply, involve, use, or advance the technological arts fail to promote the "progress of science and the useful arts" (i.e., the physical sciences as opposed to social sciences, for example) and therefore are found to be non-statutory subject matter. For a process claim to pass muster, the recited process must somehow apply, involve, use, or advance the technological arts.

Claims 1-34 recite a useful, concrete, and tangible result; however, they do not incorporate the technological arts, i.e., the recited steps could be performed entirely by hand. Therefore, claims 1-34 are deemed to be non-statutory.

Claims 47-58 recite a computer program product; however, the recited instructions are not expressly recited as causing a processor or computer to perform the recited functionality upon execution of the instructions. Therefore, claims 47-58 are interpreted as reciting software *per se*, which is non-statutory subject matter.

Claims 59-70 are directed to a signal; however, the signal is not recited as being statically embodied in a computer readable medium. Also, the instructions are not expressly recited as executable; therefore, claims 59-70 are interpreted as reciting a signal *per se*, which is non-statutory subject matter.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 65-67 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 65 is recited as being dependent from itself, which is improper. For examination purposes, it will be assumed that claim 65 is dependent from claim 64 instead.

There is no antecedent basis for "the work to the work schedule" in line 6 of claim 66. For examination purposes, it will be assumed that claim 66 is dependent from claim

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64 instead. Claim 67 is dependent from claim 66 and therefore inherits the same rejection.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-5, 7-26, and 28-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lilly et al. (U.S. Patent No. 5,787,000) in view of Layden ("A Rapidly Changing Landscape").

Lilly discloses a method for planning and scheduling mass production of items according to customer orders comprising:

[Claim 1] using at least one outstanding customer order to generate a work schedule and a material delivery schedule, each customer order of the at least one outstanding customer order including at least one item, the generating the work schedule including scheduling work to manufacture each item of the at least one item on an operation of at least one operation on a manufacturing line, the generating the delivery schedule including scheduling a delivery of material to manufacture each item of the at least one item to the operation, wherein the scheduling the delivery includes scheduling the delivery of the material prior to the time the material is needed according

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to the work schedule (col. 4, lines 33-44 -- Each customized order from a customer is integrated into a work schedule; col. 5, lines 24-67; col. 6, line 65 through col. 7, line 22 -- Resource availability, material availability, and work order information are all used to schedule the delivery of needed materials as well as to schedule the ultimate assembly of the ordered product; col. 8, lines 33-67 -- If all materials are currently available, the work order may be scheduled. Otherwise, the work order may need to be rescheduled based on the lead time of the needed materials; col. 9, lines 8-25 -- Work orders may be scheduled by priority; Columns 9-15 discuss the forward and backward scheduling algorithms that may be used to schedule work orders);

providing the material delivery schedule for the delivery of the material to manufacture each item of the at least one item according to the material delivery schedule (col. 5, lines 24-67; col. 6, line 65 through col. 7, line 22 -- Resource availability, material availability, and work order information are all used to schedule the delivery of needed materials as well as to schedule the ultimate assembly of the ordered product; col. 8, lines 33-67 -- If all materials are currently available, the work order may be scheduled. Otherwise, the work order may need to be rescheduled based on the lead time of the needed materials).

As per claim 1, Lilly does not expressly teach that the incorporation of the step of providing the work schedule to the manufacturing line, substantially immediately after generating the work schedule, for initiating work to mass produce each of the at least one item according to the work schedule nor that all recited steps are repeated a

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plurality of times during a manufacturing shift. However, Layden discusses order-driven manufacturing scheduling techniques (§ 3) in which dynamic plant management is employed (§ 5), thereby allowing dynamic factories to be “run without a plan at the floor level; orders are launched as soon as they arrive.” (§ 5) Layden’s disclosed scheduling techniques are based upon well-known scheduling theories, including “backward pass” and “forward pass” (§ 26), both of which are utilized by Lilly. Layden’s scheduling techniques allow one to instantly communicate orders to the shop floor, scheduling them as they arrive (§§ 5, 9). Layden states, “Integration of scheduling and material planning balances plantwide priorities against the need for optimal workstation sequencing. The order-of-work is not generated until the operation start time.” (§ 11) Material and resource constraints are taken into account in order to perform rapid resynchronization of customer orders (§ 13). This allows for the immediate release of new orders to the floor in real time upon acceptance and the implementation of last-minute customer order changes as well as the insertion of priority orders (§ 14). Layden’s rapid order flow performs the steps of “reserving resources and material, triggering reorders, and continuously adjusting for status changes” (§ 11). Clearly, Layden bases its principles on the common scheduling techniques utilized by Lilly (e.g., using forward and backward scheduling algorithms to incorporate material and resource availability and generate a production schedule) and enhances them by providing the work schedule to the manufacturing line, substantially immediately after generating the work schedule, for initiating work to mass produce each of the at least one item according to the work schedule and repeating all recited steps a plurality of times during

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a manufacturing shift, thereby making the order-driven manufacturing process more efficiently and effectively responsive to new customer orders, priority orders, last-minute customer changes, etc. Consequently, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to implement these enhancements taught by Layden with the details of Lilly's production planning and scheduling system in order to reap these benefits (i.e., making the order-driven manufacturing process more efficiently and effectively responsive to new customer orders, priority orders, last-minute customer changes, etc.).

[Claim 2] Regarding claim 2, since the Lilly-Layden combination teaches the details of a production planning and scheduling system that resynchronizes the production schedule and ordering of materials in real-time responsive to new customer orders, priority orders, last-minute customer changes, etc., the Examiner asserts that the limitations "wherein each time of the plurality of times that the series of steps is repeated is a repetition and the scheduling the delivery of the material prior to the time the material is needed according to the work schedule includes scheduling the delivery of the material at most one repetition prior to the time the material is needed" is addressed by the Lilly-Layden combination.

[Claim 3] Lilly discloses that the material is delivered from an available inventory of material at a material source (col. 5, lines 24-67; col. 8, lines 33-67 -- Inherently, the entity that makes a material available can be viewed as a material source).

[Claims 4, 5] Since Lilly teaches that a material availability is assessed by determining when a supply will be received into inventory (col. 8, lines 33-67), this

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implies that the needed materials may be ordered from an external inventory, including a supplier inventory. By definition, an entity that supplies another entity with materials is a supplier of those materials.

[Claim 7] Lilly discloses that the generating a work schedule comprises adding work to the work schedule and the generating a material delivery schedule comprises adding a delivery of the identified material from an available inventory of material to an operation of at least one operation on a manufacturing line to the material delivery schedule (col. 4, lines 33-44 -- Each customized order from a customer is integrated into a work schedule; col. 5, lines 24-67; col. 6, line 65 through col. 7, line 22 -- Resource availability, material availability, and work order information are all used to schedule the delivery of needed materials as well as to schedule the ultimate assembly of the ordered product; col. 8, lines 33-67 -- If all materials are currently available, the work order may be scheduled. Otherwise, the work order may need to be rescheduled based on the lead time of the needed materials; col. 9, lines 8-25 -- Work orders may be scheduled by priority; Columns 9-15 discuss the forward and backward scheduling algorithms that may be used to schedule work orders);

[Claim 8] Lilly discloses that the adding the work to the work schedule comprises adding the work to the work schedule at a start time; and the adding the delivery to the material delivery schedule comprises adding the delivery to the material delivery schedule at a material delivery time prior to the start time (col. 4, lines 33-44 -- Each customized order from a customer is integrated into a work schedule; col. 5, lines 24-67; col. 6, line 65 through col. 7, line 22 -- Resource availability, material availability, and

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work order information are all used to schedule the delivery of needed materials as well as to schedule the ultimate assembly of the ordered product; col. 8, lines 33-67 -- If all materials are currently available, the work order may be scheduled. Otherwise, the work order may need to be rescheduled based on the lead time of the needed materials; col. 9, lines 8-25 -- Work orders may be scheduled by priority; Columns 9-15 discuss the forward and backward scheduling algorithms that may be used to schedule work orders);

[Claim 9] Lilly discloses determining an expected availability of the identified material from the available inventory and wherein the adding the work to the work schedule includes adding the work at a start time after the expected availability of the identified material (col. 4, lines 33-44 -- Each customized order from a customer is integrated into a work schedule; col. 5, lines 24-67; col. 6, line 65 through col. 7, line 22 -- Resource availability, material availability, and work order information are all used to schedule the delivery of needed materials as well as to schedule the ultimate assembly of the ordered product; col. 8, lines 33-67 -- If all materials are currently available, the work order may be scheduled. Otherwise, the work order may need to be rescheduled based on the lead time of the needed materials; col. 9, lines 8-25 -- Work orders may be scheduled by priority; Columns 9-15 discuss the forward and backward scheduling algorithms that may be used to schedule work orders);

[Claim 10] Lilly discloses that the determining the expected availability of the identified material from the available inventory comprises:

determining whether the available inventory of material includes the identified material;

when the available inventory includes the identified material, determining a replenishment time for the identified material and using the replenishment time to determine the expected availability of the identified material;

when the available inventory does not include the identified material, determining that the expected availability is that the identified material is not available (col. 5, lines 24-67; col. 8, lines 33-67).

[Claim 11] Lilly discloses that the determining that the expected availability is that the identified material is not available further comprises flagging an exception (col. 8, lines 33-67 -- If a material is not readily available, then production of the order needs to be reschedule).

[Claim 12] Lilly discloses that the adding the work to the work schedule comprises adding the work to the work schedule according to a priority of the customer order (col. 5, lines 62-63; col. 9, lines 12-19).

[Claim 13] Lilly discloses that the adding the work to the work schedule comprises adding the work to the work schedule according to an order date of the customer order (Columns 9-15 discuss the forward and backward scheduling algorithms that may be used to schedule work orders).

[Claim 14] Lilly discloses that the item is a commodity (col. 4, lines 35-38).

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[Claims 15-26, 28-34] Claims 15-26 and 28-34 recite limitations already addressed by the rejection of claims 1-5 and 7-14 above; therefore, the same rejection applies.

Regarding claims 15 and 16, as discussed above, the Lilly-Layden combination discloses a planning and schedule system that resynchronizes the production schedule and ordering of materials in real-time responsive to new customer orders, priority orders, last-minute customer changes, etc.; therefore, the Examiner asserts that the Lilly-Layden combination addresses the limitations that a plurality of work schedules for one manufacturing line are generated during a manufacturing shift (claim 15) and a plurality of material delivery schedules for one manufacturing line are generated during a manufacturing shift (claim 16).

Regarding claims 29-34, as discussed above, the Lilly-Layden combination discloses a planning and schedule system that resynchronizes the production schedule and ordering of materials in real-time responsive to new customer orders, priority orders, last-minute customer changes, etc. Different workstations may be assigned particular stages of the manufacturing process (see at least ¶ 11 of Layden). Furthermore, each order is customized to the respective customer's specifications; therefore, the Examiner asserts that the Lilly-Layden combination addresses the limitations that the using a customer order includes using a plurality of customer orders (claim 29), assigning one of a plurality of manufacturing lines to the customer order (claim 30), wherein the identified material includes a plurality of identified materials (claim 31), the adding the work to the work schedule includes adding a plurality of work to the work schedule (claim 32), the adding the delivery to the material delivery

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schedule includes adding a plurality of deliveries to the material delivery schedule (claim 33), and the customer order includes a plurality of items (claim 34, please note that claim 29 recites that a customer order includes using a plurality of customer orders, which opens claim 34 to the interpretation that a plurality of customer orders exemplifies a plurality of items as well).

[Claims 35-46] Claims 35-46 recite limitations already addressed by the rejection of claims 1-5 and 7-14 above; therefore, the same rejection applies.

Furthermore, Lilly's invention is implemented using a variety of personal computers (col. 4, lines 45-57). In general, the Examiner asserts that it is old and well-known that the use of a computer is beneficial in performing calculations more accurately and quickly than they would be performed by hand, especially when the calculations involve such complex algorithms and analysis as that disclosed by Lilly and Layden. Since Lilly already uses a variety of personal computers, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify the Lilly-Layden combination to perform all of the recited steps using a computer/a variety of personal computers (including a memory and processor) in order to perform the recited calculations and analysis more accurately and quickly than they would be performed by hand.

[Claims 47-58] Claims 47-58 recite limitations already addressed by the rejection of claims 1-5 and 7-14 above; therefore, the same rejection applies.

Furthermore, Lilly's invention is implemented using a variety of personal computers (col. 4, lines 45-57). In general, the Examiner asserts that it is old and well-known that the use of a computer is beneficial in performing calculations more accurately and quickly than they would be performed by hand, especially when the calculations involve such complex algorithms and analysis as that disclosed by Lilly and Layden. Since Lilly already uses a variety of personal computers, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify the Lilly-Layden combination to perform all of the recited steps using a computer/a variety of personal computers (including a computer program product) in order to perform the recited calculations and analysis more accurately and quickly than they would be performed by hand.

[Claims 59-70] Claims 59-70 recite limitations already addressed by the rejection of claims 1-5 and 7-14 above; therefore, the same rejection applies.

Furthermore, Lilly's invention is implemented using a variety of personal computers (col. 4, lines 45-57). In general, the Examiner asserts that it is old and well-known that the use of a computer is beneficial in performing calculations more accurately and quickly than they would be performed by hand, especially when the calculations involve such complex algorithms and analysis as that disclosed by Lilly and Layden. Since Lilly already uses a variety of personal computers, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify the Lilly-Layden combination to perform all of the recited

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steps using a computer/a variety of personal computers (including a signal) in order to perform the recited calculations and analysis more accurately and quickly than they would be performed by hand.

8. Claims 6 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lilly et al. (U.S. Patent No. 5,787,000) in view of Layden ("A Rapidly Changing Landscape"), as applied to claims 4 and 26 above, and further in view of Jenkins et al. (US 2002/0188499).

[Claim 6] As per claim 6, the Lilly-Layden combination does not expressly teach that materials delivered from available inventory are selected from an in-transit inventory. However, Jenkins teaches the tracking of available materials throughout a supply chain, including in-transit inventory, in order to quickly resolve conflicts with respect to product availability when they arise (¶¶ 7-8). Since the Lilly-Layden combination is applied to an order-driven manufacturing environment (in which perfect timing of the arrival of needed materials is crucial for the reasons discussed above), the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to adapt the Lilly-Layden combination to schedule the delivery of materials from available inventory, including in-transit inventory, in order to facilitate the quick resolution of conflicts with respect to product availability when they arise, thereby minimizing any negative impact to the order-driven manufacturing plans when such conflicts arise.

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[Claim 27] Claim 27 recites limitations already addressed by the rejection of claim 6 above; therefore, the same rejection applies.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susanna M. Diaz whose telephone number is (703) 305-1337. The examiner can normally be reached on Monday-Friday, 9 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on (703) 305-9643. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Susanna M. Diaz
Primary Examiner
Art Unit 3623
November 13, 2004